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The NICHD Connection

September 2011

INSIDE THIS ISSUE

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Hot Off the Press: NICHD Researchers Develop New Candidate Vaccine for Lyme Disease

By Shana R. Spindler, PhD

Would you be surprised to learn that ticks, not mosquitoes, transmit the most commonly reported vector-borne disease in the United States? Lyme disease, an illness characterized by headaches, dizziness, body pain, and a telltale circular red rash, occurs when ticks infected with the bacteria *Borrelia burgdorferi* latch on to an unsuspecting victim. For any outdoor enthusiast, Lyme disease is a daunting risk, especially in the wooded areas of the northeastern United States.

Although over 304,000 cases of Lyme disease were reported to the Centers for Disease Control between 1995 and 2009, no vaccine is available on the market today. Two Lyme disease vaccines using a protein called Outer Surface Protein A (OpaA) were available for a short time in the late 1990s from two large pharmaceutical companies, but have since been discontinued, reportedly due to low market demand

In this month's issue of *Carbohydrate Research*, researchers from the Program in Developmental and Molecular Immunity at NICHD in collaboration with an NIAID researcher present a new vaccine candidate based on carbohydrates rather than proteins[1].

The team takes advantage of a series of complex molecules containing both fats and carbohydrates, called glycolipids. In previous work, the researchers identified a set of glycolipids present in *B. burgdorferi*, dubbed palmitoyl/oleoyl-galactopyranosyl-cholesterol (BBGL-1) and galactopyranosyl-di-O-acyl-glycerol (BBGL-2)[2] . Following the successful synthesis of an experimental glycolipo-protein vaccine against Lyme disease using BBGL-1[3], the group now turns their attention to BBGL-2.

"[BBGL-2] occurs on the surface of the bacterium, and there are numerous cases in which bacteria surface components prove to be excellent candidates for vaccines," explains Dr. Vince Pozsgay, lead author of the study.

Pozsgay describes two challenges: First, they must obtain enough BBGL-2 for

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Letter from the Editor

I hope this issue finds all fellows and families safe after the surprise earthquake and Hurricane Irene.

September promises to be an eventful month as well—the good kind. Just check out this month's events section to learn about numerous NICHD offerings, from teaching workshops to postdoc pizza parties. And, speaking of postdoc parties, let's not forget that National Postdoc Appreciation Week happens this month! So, postdocs, give yourselves a much-deserved pat on the back—and then get back to work (wink).

This month we present a nice collection of material to read while you're enjoying your last few weeks of warm summer sun. What you'll find:

- Our first "Letters to the Editor," offering enthusiastic praise for the "Writing your Grant Application" workshop recapped in the August issue
- A wonderful **"Giving an Elevator Speech" workshop recap** by Dr. Brenda Kostelecky, accompanied by a sample elevator speech recording by Dr. Mals Marriappan
- A profile of the new NICHD IC Basic Sciences Representative, **Dr. Kevin Francis**
- Answers to all of your questions about a career in science policy by Dr. Christine Torborg, NICHD former fellow
- And last but not least, a new "Hot Off the Press" column covering a fantastic intramural publication about a new candidate vaccine for Lyme disease.

On a final, and exciting, note, I think congratulations are in order for Dr. Constantine Stratakis, recently named *permanent* NICHD Intramural Scientific Director! This newsletter certainly would not be possible without his support.

Your Editor in Chief,
Shana R. Spindler, PhD

Questions, comments, or ideas can be sent to **Shana.Spindler@gmail.com**.

For easy updates about newsletter releases, follow **@NICHDconnection** on Twitter!

Letters to the Editor

In response to *"Writing Your Grant Application" Workshop Recap*, August 2011

The workshop recently offered by NICHD, "Writing Your Grant Application," is probably the single most helpful trainee event I have ever attended at NIH. I recently submitted a F30 grant almost exclusively using the approach suggested by the authors of the workshop. I found that the most difficult part of writing the F30 grant was knowing how to begin laying out my reasoning and ideas. This workshop is ideal for someone in a situation like mine, because the authors guide you section-by-section (almost line-by-line, actually) on how to make a convincing, well reasoned, and succinct application. It made the entire process seem incredibly concrete and straightforward. I would highly recommend it to anyone, and I hope that NICHD will continue to sponsor this in the future.

-Mark Ziats

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Letters to the Editor

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I found the Grant Workshop very helpful. The instructor, Dr. David Morrison, discussed in detail each section of the grant application with emphasis on arguably the most important part of the application, the specific aims section. I learned a great deal about grantsmanship and how to make my application grab the interest of the reviewers. Not only is having a good research project important, but also just as important is how you describe it in a way that makes the reviewers want to read it. There are also many resources given at this seminar, which I found very useful in writing my grant.

-Jose A. Matta, PhD

NICHD Researchers Develop New Candidate Vaccine for Lyme Disease

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study. "I think this is a very important point. Even though [BBGL-2] occurs on the bacterial surface, you have to grow enough bacteria so that you can extract sufficient amounts of the candidate vaccine component," something that is not an easy task with this organism, says Pozsgay. Second, Pozsgay explains that isolation of BBGL-2 analogs (compositions of the glycolipid that have slightly different structures) in the pure form needed for immunologic characterization "is a real challenge."

To provide sufficient amounts of pure BBGL-2, the team turned to chemical synthesis. Using methods of organic chemistry, they generated different versions of the BBGL-2 glycolipid analogs. By testing the ability for each analog to bind BBGL-2-specific antibodies, the group found a candidate BBGL-2-based vaccine containing the minimal structural features required for recognition by the immune system.

The team is now testing the immunogenicity of their candidate vaccine in mice, with the generation of a new vaccine for human use as the ultimate goal. Of course, BBGL-2 is a novel vaccine target in the early stages of development, but Pozsgay believes the results from the study are indeed promising. "You always hope, of course, but this is a work in progress!"

In addition to Pozsgay, Joanna Kubler-Kielb, Bruce Coxon, John B. Robbins, and Rachel Schneerson from NICHD, along with Adriana Marques from NIAID, are authors on the study.

REFERENCES

1. Pozsgay V, Kubler-Kielb J, Coxon B, Marques A., Robbins JB, Schneerson R. (2011) "Synthesis and antigenicity of BBGL-2 glycolipids of *Borrelia burgdorferi*, the causative agent of Lyme disease." *Carbohydrate Research* 346:1551-63.
2. Ben-Menachem G, Kubler-Kielb J, Coxon B, Yergey A, Schneerson R. (2003) "A newly discovered cholesteryl galactoside from *Borrelia burgdorferi*." *PNAS* 100(13):7913-8.
3. Pozsgay V, Kubler-Kielb J. (2007) "Synthesis of an experimental glycolipoprotein vaccine against Lyme disease." *Carbohydrate Research* 342(3-4):621-6.

"Giving an Elevator Speech" Workshop Recap

By Brenda Kostelecky, PhD

Postdoctoral fellows are regularly told to prepare a good "elevator speech" without explanation of what this buzzword means. To help postdocs learn how and why to use elevator speeches, NICHD recently organized the "Giving an Elevator Speech" workshop presented by The Morgan Group. The workshop covered three main topics:

- What is an elevator speech?
- Why do I need an elevator speech?
- How do I prepare an elevator speech?

WHAT IS AN ELEVATOR SPEECH?

The scenario envisioned for an elevator speech is the following: you step into an elevator and unexpectedly come face-to-face with NIH Director Francis Collins, Nobel laureate Elizabeth Blackburn, or [insert your professional hero here]. What do you say to this person while you have their undivided attention for two minutes in that elevator? While this exact scenario is somewhat unlikely, postdocs often encounter professionals whose influence or experience can be a benefit. Postdocs should be prepared with a short summary of their work that can pique their audience's interest.

WHY DO I NEED AN ELEVATOR SPEECH?

The elevator speech is intended to introduce yourself and to convince the audience that your work contains mutually interesting and relevant scientific issues. The elevator speech is an important part of a scientist's networking toolbox and thorough preparation of a speech is well worth the effort. Although initially envisioned for encounters in an elevator, the elevator speech can be used when you meet someone new on campus, at a conference, or during an interview. The elevator speech can also be used as an introduction to talks and poster presentations.

CHECK IT OUT!

Missed the workshop? Not sure where to start? Dr. Mals Marriappan offers his own elevator speech for curious readers. You can listen to his voice recording at **https://science.nichd.nih.gov/confluence/download/attachments/54657150/Mals_elevator+speech.mp3**

HOW DO I PREPARE AN ELEVATOR SPEECH?

First, seek common ground with your audience and highlight the scientific issues that are relevant to both of you. Remember that in an interview talk, the entire faculty may be invited and each attendee could get a vote. It may be important to convince epidemiologists, clinicians, and biochemists that your work is relevant to all of them. Second, explain what you focus on and why, getting more specific as you go. Finally, explain how you intend to accomplish your goals. What are the most logical solutions to the problem you've outlined?

Many of the workshop's attendees voiced frustration over the process of preparing an elevator speech. Tutor Scott Morgan helped each participant work methodically through the process. Scott emphasized that the speech will change slightly depending on the circumstances and can be made more fluid by practicing often. The workshop was an excellent opportunity for NICHD postdocs to get assistance preparing an elevator speech and allowed the participants to further improve their essential networking skills.

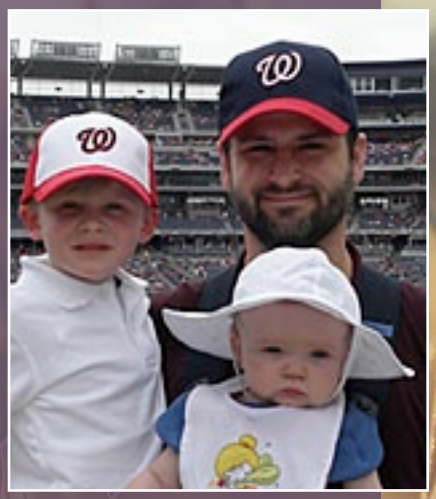
Meet Kevin Francis, our new NICHD Basic Sciences IC Representative

An IC (Institutes and Centers) representative is a postdoctoral-level fellow who serves on the NICHD Fellows Committee on behalf of the institute's fellow population. In general, most institutes have one basic science representative (in our case, this is Kevin) and one clinical representative (NICHD's Fariha Kamran continues to serve in this role for a while longer). Representative appointments last for 12 months and can be renewed for an additional year.

Responsibilities of the IC representative include attending all scheduled meetings, participating on a subcommittee, disseminating information to the fellows in the IC, communicating concerns to the Committee from the IC's fellows, and coordinating the distribution of information via subcommittees. In NICHD our representatives also work closely with the Director of the Office of Education to plan events specific to our trainees.

If you would like more information about serving on the NIH Fellows Committee, please contact Brenda Hanning at **hanningb@mail.nih.gov** or Kevin Francis at **franciskr@mail.nih.gov**.

A BIT ABOUT OUR NEW IC REPRESENTATIVE, DR. KEVIN FRANCIS:
Kevin is originally from West Virginia, where he received his bachelor's in Biology from Marshall University in Huntington, WV. He continued his studies at the University of Georgia veterinary school in Athens, GA, earning a master's in Anatomy. While at UGA, Kevin decided to forgo veterinary school in pursuit of research on neuronal differentiation and stem cell applications. He completed his doctorate in Neuropathology at the Medical University of South Carolina in Charleston, SC, studying neuronal differentiation and functional maturation of neurons from embryonic stem cells.



Dr. Kevin Francis and family

During his Ph.D., Kevin became intrigued by the transcription factor based reprogramming of fibroblasts to induced pluripotent stem (iPS) cells, pioneered by the Yamanaka group in Japan. As he was preparing to defend his graduate thesis, Kevin learned of Dr. Heiner Westphal's efforts at NICHD in the iPS field. He was particularly impressed by Dr. Westphal's collaboration on a project attempting to use iPS cells generated from patients suffering from a rare malformation syndrome that severely affects the central nervous system. Kevin was happy to join Westphal's group in July of 2009.

Kevin's research projects at the NIH are focused

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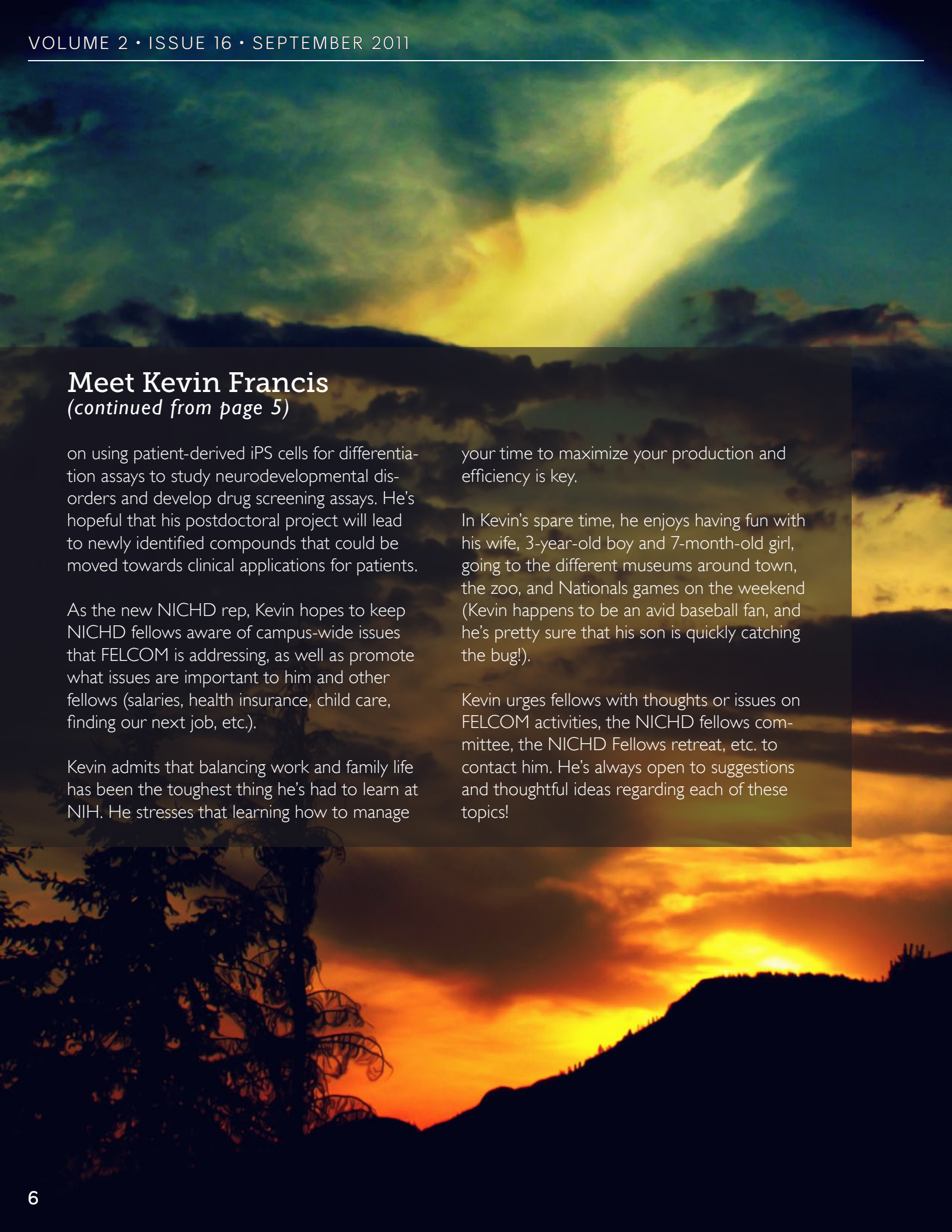

Meet Kevin Francis
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on using patient-derived iPS cells for differentiation assays to study neurodevelopmental disorders and develop drug screening assays. He's hopeful that his postdoctoral project will lead to newly identified compounds that could be moved towards clinical applications for patients.

As the new NICHD rep, Kevin hopes to keep NICHD fellows aware of campus-wide issues that FELCOM is addressing, as well as promote what issues are important to him and other fellows (salaries, health insurance, child care, finding our next job, etc.).

Kevin admits that balancing work and family life has been the toughest thing he's had to learn at NIH. He stresses that learning how to manage your time to maximize your production and efficiency is key.

In Kevin's spare time, he enjoys having fun with his wife, 3-year-old boy and 7-month-old girl, going to the different museums around town, the zoo, and Nationals games on the weekend (Kevin happens to be an avid baseball fan, and he's pretty sure that his son is quickly catching the bug!).

Kevin urges fellows with thoughts or issues on FELCOM activities, the NICHD fellows committee, the NICHD Fellows retreat, etc. to contact him. He's always open to suggestions and thoughtful ideas regarding each of these topics!

Former Fellow Follow-up with Dr. Christine Torborg

Our former fellow follow-up this month highlights a career in science policy with Dr. Christine Torborg. If you missed her advice at the fellows retreat science policy career table, you need not worry! *The NICHD Connection* interviewed this former NICHD fellow to learn the ins and outs of being a science policy analyst:

Q: What is your current title, and what do you do? What's your typical day like?
A: My title is Health Science Policy Analyst in the Office of Science Policy and Planning at the National Institute of Neurological Disorders and Stroke. Essentially, my job is to gather, interpret and disseminate information. A large fraction of my time is spent analyzing various aspects of the NINDS portfolio and activities. These analyses help the institute evaluate current programs and plan for the future.

The second major component of my job is to monitor legislation and congressional activities relevant to the institute, and respond to requests from Congress. A significant proportion of my time is also spent interacting with extramural program staff, making sure that I stay current on their activities and recent scientific advances, and keeping staff informed about what is happening on the policy side. I also provide planning, evaluation, and analysis support wherever it is needed. Most of my time is spent reading, writing, working with databases and spreadsheets, emailing, and organizing/attending meetings. I still stay up-to-date on the science, but it is a much broader view of science than when I was in the lab.

Q: At the annual retreat Q&A Tables, you mentioned that you did two details (internships) to prepare for a job in science policy. How do you find out about the details, and what were they like?
A: When I decided that I didn't want to stay in research science, several people, including my advisor, suggested that I might do details as a way of getting experience to put on a resume and seeing if I liked the jobs. Once I was done doing experiments for my final paper, my advisor agreed to support me while I did details in offices on campus. From there, I had a friend from grad school who worked in the NINDS policy office, and she said that I should talk to her boss because someone was leaving the office and they would have a position open soon. I spent 3 months in the policy office. While there, I interacted with the program staff* in extramural. Through that interaction, I was able to do a second detail as an analyst with program staff.


Dr. Christine Torborg

I applied for and was offered a full-time job in the policy office (which is where I am now). The details were definitely the key to getting this job. Even though I ended up not staying in the program staff, I am very glad I did the detail. I work with program staff a lot, and having been there, I know more about what they do. Also, I made a lot of connections while working there, which definitely helps in my current job.

Q: When did you realize that you wanted to go into policy?
A: I never had some grand plan to go into policy. Five years ago, I didn't even know jobs

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Former Fellow Follow-up with Dr. Christine Torborg

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like this existed. Once I decided not to do research, I just kept my eyes open for opportunities. This opportunity in the policy office became available, and I am very happy that I grabbed it.

Q: How did you find out about this job?
A: Because I had a friend in the office, I knew that the job would be opening up several months prior to the job posting. This was a large part of the reason that I sought a detail in this particular office. I knew that the detail could potentially lead to a permanent job.

Q: Please describe the application/hiring process. Did it take a long time?
A: After the job was posted on USA jobs, I had about 2 weeks to submit my resume, transcripts, and respond to KSAs (specific questions that they asked about my experience). It took another month or so to find out about an interview. I first interviewed with the entire office, all five of them sitting around a table taking turns asking me questions for an hour. Although intimidating, since I knew them already, it wasn't too bad. Then I came back for a second interview day. This time I had several different 30-minute interviews, one with the institute director, one with the deputy director, another with the extramural director, and finally, I had a lunch interview with the head of the policy office. It was another week or two later before I finally was offered a position. This whole process took about 2.5 months. I officially started about a month later.

Q: Do you have any advice for fellows who are thinking about entering this career field?
A: As a scientist, I focused on the science and assumed everything else would happen from there. In this career path, I realize how truly important networking and relationships are. The best way to find out about opportunities is through talking to people, and it never hurts to have someone who can vouch for your skills and be an advocate for you.

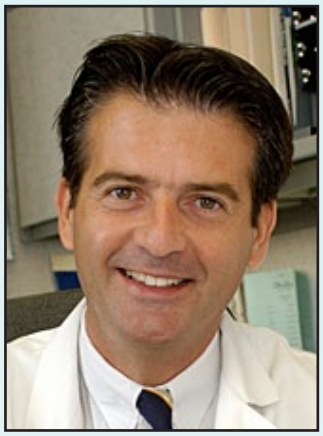
* EDITOR'S NOTES: **Program staff** includes scientists who are involved in directing extramural research programs. They oversee the scientific component of extramural grants, make recommendations about what to fund, interact with PIs, help PIs navigate the grant process, write Funding Opportunity Announcements for different initiatives, develop workshops, and coordinate research efforts.

A **detail** is a short-term rotation, either part-time or full-time, in an area of NIH (most often) outside of the lab, governed by a formal Memorandum of Understanding. It includes the learning objectives for the detail. NICHD arranges such rotations on an individual basis, through the Office of Education.

September Announcements

DR. CONSTANTINE STRATAKIS IS NAMED NICHD INTRAMURAL SCIENTIFIC DIRECTOR!

We are happy to announce that Constantine A. Stratakis, M.D., D.Sc, is the new Scientific Director of the Division of Intramural Research (DIR) at NICHD.



Dr. Constantine Stratakis

As the new intramural Scientific Director, Dr. Stratakis will oversee our 11 research programs and 79 units and sections of NICHD. He will support the DIR with its objectives to understand the basis of human development and reproduction and to optimize the health of children and women.

To read more about Dr. Stratakis, please visit NICHD Spotlights.

NATIONAL POSTDOC APPRECIATION WEEK IS SEPTEMBER 19-23

In honor of National Postdoc Appreciation Week, NICHD leadership will be throwing a pizza party for our institute's postdocs on **Wednesday, September 21, at 12 noon** on the patio behind building 6 or, in the event of rain, in room 2A48, building 31. This is a great chance to meet new NICHD postdocs, catch up with old friends, and—well—have lunch on your boss!

If you would like to help set-up before the event, please contact Brenda Hanning at hanningb@mail.nih.gov.

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September Announcements

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NEW FAES GRADUATE COURSE ON REGENERATIVE MEDICINE

If you're thinking about taking a course this fall, consider Regenerative Medicine—Applications and Treatments, co-instructed by NICHD postdoctoral fellow Dr. Silviya Zustiak. Topics will include stem cells, tissue engineering, biomaterials, immune response, fusion therapeutics and more.
Classes Start September 14th, 2011
Class hours: Wednesday 5:30 – 7:30 p.m.

Registration in person will be held in Bldg. 60, Suite 230
Registration information at: http://www.faes.org/pdf/fall2010catalog.pdf

For more information contact: Dr. J. Hunsberger at hunsbergerjg@gmail.com
Class size is limited, so sign up soon!

SCIENCE TRAINING AND EDUCATION AWARD OPPORTUNITIES

The Federation of American Societies for Experimental Biology (FASEB) training and education award page is a site worth checking out! Over 30 awards for graduate students and postdocs from FASEB society programs are presented in a comprehensive list. Have a look!

CONGRATULATIONS TO OUR 2011 NIH SUMMER RESEARCH POSTER DAY PRESENTERS!

64 NICHD trainees participated in the poster day held during the 2011 NIH Summer Research Festival on August 4, 2011. Job well done to the trainees and mentors who helped them prepare!

September Events

FRIDAY, SEPTEMBER 2, 9-11 AM

"Speaking about Science: Giving Scientific Talks"
Scott Morgan
Learn about presentation structure, the take-home message, how to start and end a talk, delivering a talk (stage fright, being heard, accents, rehearsing)
Group size 25-30 people
Please register with Brenda Hanning at hanningb@mail.nih.gov

WEDNESDAY, SEPTEMBER 7, 12-1:15 PM

Fellows exclusive lunch meeting, before the NICHD Director's Lecture (3:30 p.m. in Natcher)
with Dr. Cliff Tabin, Chairman of Genetics, Harvard Medical School
Only a few spots left!
Please register with Brenda Hanning at hanningb@mail.nih.gov

TUESDAY, SEPTEMBER 13, ALL DAY

Teaching Workshop: "Overcoming Apathy and Creating Excitement in the Classroom: Strategies for Teaching from the Psychology of Learning"
Todd Zakrajsek, Ph.D., Executive Director, Center for Faculty Excellence, University of North Carolina at Chapel Hill
Group size of 25-30 people
Visit http://www.youtube.com/watch?v=vw0rYfOt0hk for a sneak preview!
Please register with Brenda Hanning at hanningb@mail.nih.gov

THURSDAY, SEPTEMBER 15, 1-3 PM

"What Are Companies Looking For?"
Dr. William T. Schrader, Deputy Scientific Director, NIEHS
Learn what you need to do to secure a position in industry!
Space available for 35 people, so sign up soon!
For details, please contact Brenda Hanning at hanningb@mail.nih.gov

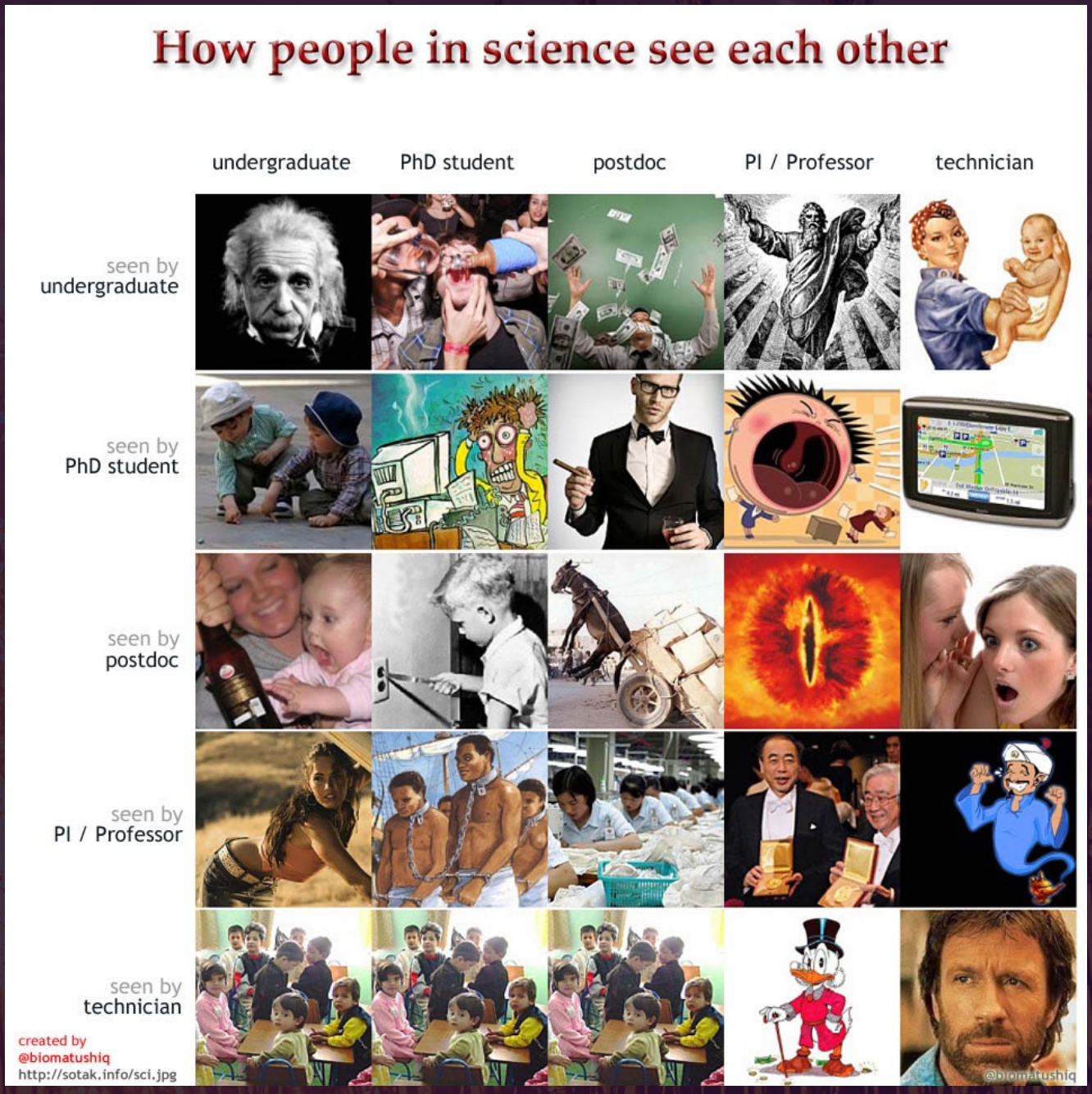
WEDNESDAY, SEPTEMBER 21, 12PM

Postdoctoral appreciation pizza lunch
Patio behind building 6 or room 2A48, building 31

MONDAY, SEPTEMBER 26, 11-1 PM

"Job Interviewing Skills"
Scott Morgan
Will you be actively searching for jobs this year? Gain a competitive edge!
This seminar is limited to ten people and includes a one-on-one session with instructor, Scott Morgan.
Please register with Brenda Hanning at hanningb@mail.nih.gov

DO YOU EVER WONDER HOW OTHERS VIEW YOU IN THE LAB? Maybe this comic, a viral hit within the science blogosphere, can shed a little light (and humor!) on the matter.



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